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THE EDUCATION AND ACHIEVEMENT OF THE TOTALLY DEAF IN CONTEMPORARY AMERICAN SOCIETY WERE DESCRIBED. DISCUSSED IN DETAIL WERE THE FOLLOWING TOPICS--(1) A DESCRIPTIVE MODEL OF DEAF INDIVIDUALS, (2) EDUCATION OF THE DEAF, (3) SIGN LANGUAGE, AND (4) EXPERIMENTAL RESEARCH IN LANGUAGE AND CONCEPT FORMATION. THESE DISCUSSIONS SUGGESTED THAT THE PERSONALITY PROBLEMS OF THE DEAF, AS WELL AS THEIR PROBLEMS OF COGNITIVE LIMITATION, EDUCATIONAL ACHIEVEMENT, AND SOCIAL ADJUSTMENT (BEYOND WHATEVER PROBLEMS MAY EXIST IN THEIR FAMILY LIFE), MAY BE THE RESULTS OF CURRENT LIMITATIONS OF SIGN LANGUAGE AND INADEQUATE METHODS OF DEAF EDUCATION. THE AUTHOR SUGGESTS THERE IS A NEED FOR (1) MORE KNOWLEDGE ABOUT THE DEAF POPULATION OF THE UNITED STATES, (2) AN EXAMINATION OF THE REASONS FOR THE CONTINUED EXISTENCE OF FAILING PHILOSOPHIES OF EDUCATION OF THE DEAF, (3) AN INQUIRY INTO THE ATTITUDES OF THE DEAF TOWARD THE EDUCATION THEY RECEIVE, AND (4) A STUDY OF THE ORGANIZATIONS OF AND FOR THE DEAF AND THE ROLE OF THE DEAF IN THESE ORGANIZATIONS. (AL)

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POLICY STUDY 1

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HERBERT R. KOHL

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HERBERT R. KOHL is the author of an examination of 20th century philosophy, *The Age of Complexity* (Mentor Books), and is at work on a study of classroom dynamics, *36 Children* (to be published in 1967 by New American Library). Mr. Kohl received his bachelor's degree in philosophy from Harvard and a master's degree in special education from Teachers College, and has been a Henry Fellow at Oxford in philosophy. Formerly on the staff of the Center for Urban Education, he currently is attached to the Horace Mann-Lincoln Institute of School Experimentation developing innovative programs for Benjamin Franklin High School in Harlem.

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LANGUAGE AND EDUCATION OF THE DEAF

Herbert R. Kohl

PREFACE

This paper describes the education and achievement of the profoundly deaf individuals in contemporary American society. At the same time, it presents a critique of the literature that has grown around the problems of the education and cognitive abilities of the deaf. This paper, however, does not delve into the historical, psychological, and sociological causes of what emerges as a depressing situation, although some such speculations are advanced in the concluding remarks. The main focus, then, is the education of the deaf and its relative failure. In light of the increasing educational requirements and technological nature of employment in the United States (as well as the urbanization of the country), the improvement of this education is an urgent problem. It is to that end that this paper is primarily addressed.

The work presented here can be seen as a study in special education, though this is hardly as limited as it may sound. Special education in the broadest sense can be defined as the education of those individuals that our society chooses to treat as special. It may be that in these cases we reveal more about our own fears of not being "normal," or of being "normal" and wrong, than we do about the group that is stigmatized. For example, recently we have begun to realize that the Negro has been the victim of our own fear of being different and, in part for this reason, have concerned ourselves with the problems of racial segregation and integration. This particular concern is but a variant of the general problem of the integration and segregation of all of those we consider special. In my discussion, I propose to treat the older and more universal prejudice of man against those unfortunate enough to be deaf as a paradigm for the study of the lengths to which we sometimes go to force our views of the acceptable on those who have no choice but to be different.

I. A Descriptive Model of Deaf Individuals

Deafness has always been a great social stigma (17). Historically the deaf and dumb were "possessed," "struck by the devil," or even messengers of Satan himself (6, p. vii). They appear in literature and art as fools, wretches, demons—the great pariah group within society! One need only think of Goya's terrifying "Tales from the House of the Deaf." It is not surprising then that very little has been known about the deaf until quite recently, or that it has been discovered that they form a subcultural group within our society that lives, marries, and remains together as an enclave in a hearing, over-verbal world (21). The best available estimates indicate that there are about 150,000 totally deaf individuals in the United States (6, p. 235)[1] of which more than one-half are deaf in the sense to be used in this paper, that is, an individual who is either congenitally deaf or deaf before the age of two, who has a hearing loss of at least 80 decibels in each ear and whose deafness interferes with the normal acquisition of language (6, 8, 9, 16, 21, 40).

[1] Figures from this source, *Family and Health Problems in a Deaf Population*, are based only on the population of deaf individuals studied by the New York State Psychiatric Institute. Few other figures exist. These, however, were presented to the research staff at the Lexington School for the Deaf in New York and deemed reasonable as nationwide statistics. Nonetheless, one must be careful until more studies are made. Where possible, the present discussion quotes additional sources.

The literate totally deaf population over twelve years of age in New York State was estimated by the Psychiatric Institute at 10,355 (6, p. 10), of which 2,857 names were selected for its study (6, p. 24). The figures include both individuals born deaf and deafened adventitiously. Where possible, care has been taken, in this discussion, to quote statistics that are relevant only to the congenitally deaf and the adventitiously deaf who were deafened before two years of age. Occasionally it has not been possible to separate out this group from the total deaf population. Since the separation would only skew the results more towards poor performance and maladjustment, according to all indications from the literature (7, 12, 15, 22, etc.), this discrepancy is not significant for the points presented in this paper.

The deaf are still figures of fear and derision. H. D. Klinghammer, a German audiologist, tested the perception of hearing individuals toward the deaf and blind through recordings of the latter's voices and speech (17), and found the blind were considered "lyric," "nice," "sweet," "charming," while the deaf were characterized as "mentally disordered" or "retarded." One woman responded, "I don't believe these are human beings, they prate like a parrot" (17, p. 615).

The deaf seem to be perfectly aware of the attitudes of the hearing towards them. The deaf individuals studied by the New York State Psychiatric Institute generally felt that the hearing world disliked, pitied, and misunderstood the deaf (see Table 1).

TABLE 1

OPINIONS REGARDING ATTITUDE OF HEARING PEOPLE TOWARD THE DEAF[a]

Responses regarding attitude of hearing people toward the deaf	*Number*	*Per Cent*
1. Total	430	100.0
2. Hearing people like the deaf	62	14.4
3. Some hearing people like the deaf	28	6.5
4. Some hearing people like the deaf, and some hearing people pity the deaf	10	2.3
5. Hearing people pity the deaf	14	3.3
6. Hearing people dislike the deaf	102	23.7
7. Some hearing people dislike the deaf, and some pity them	8	1.9
8. Hearing people are not interested in the deaf	6	1.4
9. Hearing people do not understand the deaf	41	9.6
10. Don't know or no opinion	124	28.8
11. Other	35	8.1

[a] From 6, p. 129.

The deaf child, who 90 per cent of the time has two hearing parents, experiences this rejection from the time his deafness is discovered. It is not surprising that individuals experienced in working with the deaf note that deaf children of deaf parents seem much happier and better adjusted than

children who have hearing parents. The same seems true for deaf neurotics (6, p. 184).

Most deaf children thus have social problems which complicate the single greatest problem they face—language disability. The deaf child does not learn to talk naturally and therefore is cut off from his mother and other adults from the start of his life. The world doesn't seem as active or as giving to him. "Without communicable speech . . . [the deaf child's] wishes are apt to be delayed excessively in fulfillment and because he has to rely mainly on sight alone, except for smell and touch, he loses the reassuring and familiar sounds of mother that ordinarily compensate her failure to be immediately within sight when needed. These deprivations ordinarily far exceed those of the hearing child and make for less confidence and trust in the mother as provider of wholeness" (7, p. 349). This frequently produces a clinging dependent attitude which is accompanied by outbursts of anger, rage, and frustration that accompany the deaf child throughout school (1, 2, 6, 21).

Further, when deaf children enter schools for the deaf, which is ordinarily the case, they are taught oral language by hearing teachers, and are further frustated by their failure in language (15, 48, p. 27). At the same time, they encounter other deaf youngsters and usually learn sign language surreptitiously from them (44, 47, 49). In a school run by hearing teachers, who as a rule prohibit signing (13, 14, 15, 19), the deaf children probably develop strong emotional ties and loyalties to each other, which prepare them to enter an exclusive and excluded community of the deaf as adults.

Many claims have been made for the success of education for the deaf, mostly by teachers of the deaf (13, 40). Closer scrutiny, however, reveals a very dismal picture. According to U. S. Government statistics (see Table 2), of the 1,104 students of sixteen years or more who for one reason or another left deaf schools in 1961-2, the 501 graduates had a grade level range of 3.1 (grade three, one month) to 12.8 in school achievement with a mean of 4.7, indicating that in general the deaf population is between four and seven years retarded. In the population of deaf individuals studied

at the New York State Psychiatric Institute (6, p. 117), .8 per cent had no schooling, 5.1 per cent left school before ten, 11.7 per cent more left before fifteen, another 26.8 per cent left before sixteen, and 50.6 per cent graduated from an elementary school for the deaf or a hearing elementary school.[2] Only 1.3 per cent went to a hearing high school while an additional 1.5 per cent had some college education and another 2.2 per cent graduated from college. It is interesting to note that most of those deaf individuals who graduated from college entered school before the age of four (6, p. 117).

TABLE 2

ACHIEVEMENT TEST SCORES FOR 1,104 SCHOOL LEAVERS AGE 16 AND UP FROM 55 RESIDENTIAL AND 9 DAY SCHOOLS OR CLASSES IN THE UNITED STATES DURING THE SCHOOL YEAR 1961-62[a]

		Age			*Grade equivalent of achievement test scores*		
	Number	*Range*	*Median*	*Mean*	*Range*	*Median*	*Mean*
Graduates	501	16 to 23.0	19.1	18.8	3.1 to 12.8	8.1	7.9
Nongraduates	603	16 to 23.7	19.0	18.6	9 to 10.5	4.7	4.7

[a] From 33, p. 213.

As adults most deaf individuals use sign language exclusively, or a combination of signs and words (see Table 3). This is true regardless of whether the individual went to college or not, and is also independent of intelligence. Naturally this limits considerably the society in which the deaf can live.

[2] There are indications in the literature (15, 47, 48) that figures on graduation are lower for the deaf as defined in this paper than for the totally deaf population. However, no reliable nationwide statistics have been found.

TABLE 3

SCHOLASTIC ACHIEVEMENT BY MEANS OF COMMUNICATION[a]

Means of communication	Did not graduate		Graduated from school for deaf or its equivalent		Higher Education	
	Male	Female	Male	Female	Male	Female
Total	106	95	127	134	19	12
Mainly speech	23	17	32	52	11	8
Mainly signs	58	50	79	42	4	4
Equal use of speech and signs	14	24	12	36	4	0
Other	11	4	4	4	0	0

[a] From 6, p. 119. See also 48, p. 26.

The picture is equally restrictive vocationally. There are deaf individuals who achieve a great deal (6, p. 131) and overcome limitations imposed on them by their handicap, but these are the exception—out of 95,000 scientists listed in *American Men of Science*, for example, three are deaf (6, p. 133). The public view of the deaf is usually presented more pleasantly since the leaders of the deaf community are mostly adventitiously deaf and have full command of language (personal communication from teachers of the deaf). However, the fact seems to be that the deaf are mostly in the lower socioeconomic job categories. In the New York State Psychiatric Institute population, 87.5 per cent of the deaf males were employed in manual labor (30.4 per cent unskilled), less than 3 per cent were employers or businessmen. Including all the male college graduates, 5 per cent were clerical workers. There were no professionals in the group (see Tables 4, 5, 6). All available evidence indicates that these statistics are not limited to New York State (15).

TABLE 4

OCCUPATIONAL CLASS OF THE EMPLOYED DEAF[a]

Occupational class	Total		Male		Female	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
All classes	382	100.0	239	100.0	143	100.0
Office-worker	23	6.0	4	1.7	19	13.3
Skilled	218	57.1	145	60.6	73	51.0
Unskilled	116	30.4	69	28.9	47	32.9
Custodial	15	3.9	11	4.6	4	2.8
Own business	10	2.6	10	4.2	0	0

[a] From 6, p. 122.

TABLE 5

WEEKLY INCOME OF WAGE-EARNERS BY SEX[a]

Weekly income	Total		Male		Female	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Total	264	100.0	178	67.4	86	32.6
$ 1- 19	8	3.0	4	1.5	4	1.5
$ 20- 39	22	8.3	7	2.7	15	5.7
$ 40- 59	67	25.4	19	7.2	48	18.2
$ 60- 74	71	26.9	55	20.8	16	6.1
$ 75- 99	53	20.1	50	18.9	3	1.1
$100-149	39	14.8	39	14.8	0	0.0
$150 or over	4	1.5	4	1.5	0	0.0

[a] From 6, p. 122.

TABLE 6
CUMULATIVE DISTRIBUTION OF WEEKLY INCOME BY SEX[a]
(264 RESPONDENTS)

Income	*Male*	*Female*
Under $ 20	2.2%	4.7%
Under $ 40	6.2	22.1
Under $ 60	16.9	77.9
Under $ 75	47.8	96.5
Under $100	75.8	100.0
Under $150	97.8	100.0
Total	100.0%	100.0%

[a] From 6, p. 122.

All is not so grim however. Most deaf individuals marry (60.3 per cent males, 68.9 per cent females in New York State survey). These figures are higher than those reported forty years ago, and the deaf community is growing. Fertility rates of deaf women are normal and the majority of their marriages are to other deaf people. Only 5.1 per cent of women born deaf married hearing men. Of the children born to deaf individuals, 10 per cent are born deaf. These marriages are reasonably stable, divorce rates being higher than for hearing individuals but much less than for disturbed individuals, hearing and deaf (6, Ch. 2). However there are usually few premarital heterosexual relationships amongst the deaf (6, Ch. 5), and it is possible that the stability of these marriages may have more to do with the coherence and strength of the deaf community than with the individuals involved in the marriages.

There is considerable disagreement about the emotional characteristics of the deaf. Myklebust (21, pp. 204-212) claims that there is a qualitative difference in the behavior and personality of deaf individuals. He attributes this to the qualitative difference in experience the deaf have, and shows on a descriptive basis that the deaf are socially immature as compared to the hearing and even to individuals who are hard of hearing. He goes on to claim that, according to the Vineland Social Maturity Scale, the deaf seem

to decrease in maturity as they grow older. He also notes that in the area of "caring for others," which involves socialization and occupation, the deaf may be as much as 20 per cent retarded (though they seem normal with respect to self-help and self-direction). There are few who doubt the facts of Myklebust's findings, but as will be seen below, almost all educators and researchers of the deaf feel that the difference between deaf and hearing individuals is developmental and not qualitative. The arguments are mostly *ad hominem*, and since the facts are agreed upon this question may be unsolvable.

Altshuler (1, p. 338) asserts that deaf individuals, both disturbed and normal, seem to manifest certain characteristics which he lists as 1) egocentricity and lack of understanding or regard for feelings of others, 2) relatively little thoughtful introspection, 3) considerable impulsive behavior, and 4) an adaptive approach characterized by coercive dependence.

Edna Levine, using the Rorschach and WAIS tests (6, p. 174), concurs when she finds the New York State Psychiatric Institute's deaf population generally to be 1) underdeveloped with respect to conceptual forms of mental activity (though evincing normal potential), thereby 2) indicating marked emotional immaturity, and that 3) they have lags in comprehension of interpersonal relations. She also finds that the deaf she studied had 4) highly egocentric life perspectives, 5) a markedly constricted life area, and finally, 6) rigid standards of etiquette and behavior.

These three sets of results—Myklebust, Altshuler, and Levine—are remarkably consistent. However the problem of explanation remains: one still doesn't know the etiology of the problems the deaf have. A phenomenological-descriptive model is just a beginning. The actual language of the deaf must be examined in more detail—just how much deprivation exists? At what point do the deaf fail conceptually, and how does this relate (if at all) to their emotional and social problems? Is sign language, which remains the most common means of communication amongst the American deaf, despite the efforts of all education for the deaf in the United States (47, p. 26), a language, and does it have limitations? What part do experiential and language deprivation play in creating the condition of the deaf in the United States? And how many of the problems of the deaf, leading to the growth of a separate deaf subculture in America (21), are due to hearing society's failure to accept or educate the deaf?

This paper cannot answer all these questions, but it will attempt to approach the subject logically and consider the state of research in this field at the present moment.

It will start with the education the deaf are subjected to, proceed to an analysis of the language they use despite this education, and then turn to a consideration of thought and concept formation among the deaf. Finally it will attempt to raise specific questions and suggest experiments that can lead to a more objective and at the same time more compassionate study of the deaf individual.

II. Education of the Deaf

There are essentially four methods of education for deaf children in the United States. None involve the use of natural sign language which, in fact, most deaf individuals use as adults (6, 49). All four methods depend (essentially) upon lipreading. This is the only direct way a profoundly deaf child can have access to the linguistic world of the hearing. Yet by itself lipreading is hardly adequate for learning English from or perceiving it upon the lips of others. Such dissimilar pairs of words as "cart" and "yarn" and "green" and "red" are practically identical in visual appearance (40, p. 3). Nor can a word which is formed from sounds at the back of the mouth—"hit" is an example—be lipread. Neither children nor adults can learn the patternings of sounds that are necessary for an understanding of even the most basic phonemic contrasts in English from lipreading alone (40, p. 124). Hester suggests that "Language facility may be one of the most important keys to success in lipreading" (15, p. 215). Further there is no correlation between intelligence and lipreading ability or, more important, between achievement and lipreading ability (15, p. 215). It seems clear, then, that lipreading is only valuable as a subsidiary method for understanding spoken utterances of a language that is already known.

Schools for the deaf recognize the inadequacy of lipreading as the sole method for *learning* English and supplement it in different ways which lead to the hotly debated differences in educational techniques imposed upon the deaf by their for the most part hearing teachers.

The first and perhaps most orthodox American method is the *pure* oral method (38). It developed, in America, at the Clarke School for the Deaf

and other pioneering schools during the late nineteenth century. The method reduces the language of hearing infants to certain developmental stages and then tries to teach deaf children at much later ages to work through these developmental stages. All sign language is discouraged, the motto is "talk, talk, talk to deaf children" (38).

The method starts with lipreading and goes from 1) sound elements and 2) combinations to 3) phonetic spelling of words and finally 4) orthographic forms of speech. Then it approaches reading and writing. The greatest appeal of this method is to the hearing parents of deaf children since its aim is to teach deaf children to talk. Unfortunately it has not succeeded in teaching deaf adults to use oral language as their primary means of communication, though it is difficult to document this point with any precision. It can be easily surmised from the number of variations that the *pure* oral method gave rise to, and from the "oral failure" frequently referred to in the literature.

Thus, for example, the British educator of the deaf, Eric Greenway, says, "The wrongly termed 'oral failure' has always been a matter for the conscience of the teachers of the deaf, and during the first forty years of this century—the heyday of 'pure oralism'—its specter haunted the scene." He concludes that

> for almost a century we have witnessed the great oral experiment. . . . In theory it is ideal and there are essential virtues in its principles. In many respects it has been a courageous attempt to bring the deaf into the world of the hearing by a simulation of the normal means of communication. But an honest appraisal of the results shows plainly that it has not met with the overall success that teachers hope for or that the deaf themselves desire and demand. . . . It cannot be denied that there have been some outstanding successes with an exclusive oral system, but for the majority it fails because it is unable to provide the fullest and most congenial means of communication [12, pp. 434-436].

The oral method uses essentially the same approach as the *pure* oral method, except that it starts not only with lipreading but also the reading and writing of orthographic forms of English (19, 38). It has a tendency to label everything in the deaf child's environment and always attempts to call his attention to the written rather than the spoken form of English. Unfortunately this method has proved no more successful than its parent approach in teaching the deaf to use oral language (12).

A further modification arose early in the century which can perhaps be attributed to the influence of John Dewey on education in general. For thirty-three years—from 1923-1958—Mildred Groht was principal of the Lexington School for the Deaf in New York and under the pragmatic influence experimented with the use of "natural language" for deaf children (13, 14). The essential idea of the natural language method is that the deaf child should learn to speak through activity. He is allowed the freedom to explore as normal children do and thus, in theory, is intrinsically motivated to learn language because, like all children, he wants to know (14). The school is run on an activity program, and the teachers continually talk to the children and encourage them to ask questions. This activity program is supplemented by special instruction in lipreading and articulation. Sign language however is prohibited. Despite the great enthusiasm of the faculty, as witnessed by this author, this method too has produced deep discontent over what has not been achieved.

The final method, developed at the Rochester School for the Deaf in Rochester, New York (15, 38), and currently used experimentally in New Mexico (15), incorporates the manual alphabet into instruction and also uses the oral method. James Galloway, superintendent of the Rochester School, says that

> the effectiveness of the Rochester Method depends upon 1) the consistent use of English, either spelled on the fingers, spoken, or written; 2) a strong supporting program of speech and speech reading; and 3) the complete elimination of the language of signs.
>
> On the manual side, the Rochester method is orthographic in nature; that is, the hand positions in fingerspelling are identified with the 26 letters of the English alphabet [11a, p. 440].

The most radical use of this method has been reported in Russia where the mothers of deaf children have been taught the manual alphabet and both speak and sign to their children (15). In the United States the method has begun to be adopted by some private schools and is used in many public schools as well. Some American schools have reported optimistic results (15), but critics examining these schools, as well as the ones in Russia, seem much more dubious (personal communication from Ann Mulholland who visited the Russian schools).

The major conclusion that can be drawn from a thorough investigation of the literature on the education of the deaf is bluntly that it has failed. None of the methods currently used in American schools for the deaf has produced results which encourage any optimism. As one teacher of the deaf has said: "We see now . . . that there are deaf children whose chances of obtaining satisfactory education by oral and auditory means alone are so small that the method—not the children—must be considered largely a failure" (12, p. 434). The demoralization of teachers of the deaf, mostly suppressed in public discussion, certainly cannot aid what is already a most depressing situation.

Yet the deaf do communicate with each other, and do seem to form a coherent subculture in a hearing society, and their main problems seem to come not from their relations with each other so much as from their relations with the hearing. The deaf tend to intermarry, be fertile, work at the same jobs for a long time, be excellent job risks, and function within their own society (6). Deaf children of deaf parents are generally normal and stable (6). Yet the deaf do not master English in general, and even many who can use English, do not. How then do they communicate? What is missing from the whole educational picture in America?

The answer is perhaps obvious—sign language. The author was struck, in both his reading and his visits to schools for the deaf in the metropolitan area (Lexington School, P.S. 47), that not one school officially taught sign language, the means of communication used by most deaf adults and, as it turned out, by deaf children with each other, *no matter what the educational policies of the particular school.*[3] Any extended visit to a school for the deaf will dramatically illustrate that, whatever the educational policy, the children communicate with each other by signing.[4]

It seems miraculous that children who mostly have hearing parents, are taught by hearing teachers, and are prevented from using the means of

[3] Two schools in the United States have actually succeeded in remaining "pure," the Clarke School in Massachusetts and the Central Institute in St. Louis. These exceptions serve to prove the point when one discovers the lengths to which they have had to go to prevent sign language from entering their schools.

[4] Anyone interested in further verifying this need only go to the Union Square subway station in New York City at 3:00 on a school day and observe all of the students from P.S. 47, a bastion of oralism, engrossed in signed conversation. I am indebted to Dr. Mortimer Kreuter for pointing this out.

communication most natural to them in school are as healthy as they are. It is certainly no wonder that peer relationships become very important in the life of the deaf.

Teachers of the deaf continually claim that their whole educational programs for exceptional children are geared to meet the special needs of the children (12, 13, 14, 15, 19, 38, 39). But it is not as if sign language has been thoroughly analyzed and then discarded as an adequate method of teaching. After an intensive search, only six manuals of sign language and three serious structural treatments of it were uncovered (43, 44, 45, 46, 47, 48, 49, 50, 51). No bibliography exists nor are there any listings for sign language in a bibliography of children's language (18). One cannot help but wonder.

III. Sign Language

The education of the deaf has not always been so rigidly oral. In 1750 L'Abbe de L'Epee, a French priest, undertook the education of two deaf mute sisters. Fingerspelling had been used intermittently to teach language to the deaf but the method had failed. However, sign language of some sort existed among the deaf, and perhaps influenced by Rousseau, L'Epee took it to be a "natural" language of gesture which he learned and used in order to teach the sisters. To this "natural" language, which is akin to mimicry, L'Epee added a number of grammatical signs to allow French to be translated into sign language. He established a school in Paris in 1860 and was succeeded there by his pupil, L'Abbe Sicard (45).

In 1815 Thomas Gallaudet, an American, was sent to Europe by some businessmen from Hartford, Connecticut, the fathers of deaf children, to study continental methods of education for the deaf. He went to London and was refused access to Watson's Asylum in London (47), where secret and expensive educational methods were jealously concealed. However he met Sicard and was invited to Paris. There he learned L'Epee's system of sign language. Upon returning to America in 1817, he established the first school for the deaf in the United States, the American School for the Deaf in Hartford. The school used L'Epee's methods and was replicated all throughout the United States. L'Epee's sign language fused with the vary-

ing natural gestures and signs used throughout the United States and is the basis for present-day sign language (47). In 1864 Congress established a national college for the deaf in Washington, D. C., named for Gallaudet.

The use of oral methods of education for the deaf is a late 19th century phenomenon. As a result of this focus there have been few serious studies of the nature of sign language. Most of the literature on sign language that exists consists of practical manuals for missionaries and priests who work with the deaf (43, 44, 45, 46, 50, 51). However, two recent studies have begun a systematic analysis of sign language, and indicate many interesting questions for research. William Stokoe (47), in 1960, studied the structure of sign language by filming conversations of deaf students at Gallaudet College, and Rev. Fr. Bernard T. Tervoort, in 1961, filmed conversations of couples of both American and Dutch deaf children (seven to twelve years) and developed a preliminary psycholinguistic analysis of sign language (49).

Both authors agree that sign language is an independent language that is neither a translation of oral language nor a poor imitation of it. Stokoe shows that the signs are made using a series of contrasted movements that are patterned and form a system. These movements differ systematically with respect to location (tab), configuration (dez), movement (sig), and the part of the body (e.g., whole face, upper head, etc.) they use as frame of reference. He has developed a system of recording sign language according to tab, dez, and sig, and hopes to write a dictionary of sign language which uses the signs and not poor verbal equivalents of them as entries. Stokoe likens his analysis to a phonemic analysis of all possible human sounds.

Tervoort approaches the problem on what could be called the morphemic level. He is interested in analyzing sign language on the morpheme/gesture/word level—i.e., of finding whole units of meaningful signs. He starts by discussing the general inclination humans have to imitate. At the earliest stage of deaf children's language this imitative capacity is crucial, for from it, he argues, sign language develops. Many signs vary from community to community and adult to adult, just as words in the argot of oral language vary. However, signs have even greater fluidity, especially in the language of children, for many of them are non-repeated imitations of concrete situations. They are imitative performances which are not integrated into the structure of sign language, though from them it gets its impetus.

These natural gestures depend upon situational understanding and not a general understanding of the meaning of formal signs. Deaf children frequently use natural gestures when attempting to describe a thing they do not have a word for. Within these contexts single gestures are not recognized as minimal free units, and Stokoe's particularistic analysis of sign language would not be applicable. This level of language is more akin to mime than to oral language.

The children's signs, however, do not all remain bound to situations. Once used, Tervoort reports, a sign has a tendency to become repeated; once understood by more than one person *the sign is no longer a natural gesture*. The identification of the sign with the object it attempts to describe is no longer based on its imitative clarity but rather on a common conventional agreement between the signers. They refer to their memory for a sign's meaning, not to its descriptive adequacy. Such signs tend to become abbreviated. Relevant features of the signs are abstracted and stand for the whole. The signs begin to follow *linguistic rules* inherent to the system of sign language rather than trying to imitate what is being described. In sign language many gestures that may seem natural are in fact formal, and frequently many gestures that once were natural are used in formal ways and their naturalness is forgotten or not known by the signers. Tervoort talks of the sign for "good," which is laying one's hands crossed on the chest imitating an embrace. He asked some children what they thought of a particular man, they signed "good," and he asked if they meant they wanted to embrace the man. The children were shocked, denied it completely. However later in another context, they criticized him for using the crossed hand sign for good instead of another one since you cannot sign "good candy" because candy cannot be embraced. Tervoort claims that this interplay between natural and formal meanings of many signs prevents sign language from abstracting many concepts. He found that most formal signs have concrete meaning, and because of their closeness to the actual objects that motivated their use, it is difficult to use the signs in the variety of situations that words can be used.[5]

Words have the distinct advantage of not resembling the objects they

[5] It is striking that in a Piaget-type study of deaf children's concept of causality, Nass (24) found that the children used almost no animistic explanations and stuck almost exclusively to the concrete given.

describe and therefore can be generalized to many situations, and used concretely, abstractly, ironically, metaphorically, humorously, etc. In analyzing his film, Tervoort discovered hardly any spontaneous metaphoric or ironic uses of sign language, or expressions of humor. The few examples of metaphoric-ironic use he found are "baby" for "immature" and "what-a-much-hair" for "bald." Thus it appears that sign language (excluding the use of fingerspelling) is concrete and to this extent is severely restrictive, not out of necessity so much as through the difficulty of getting beyond the imitative.

Fingerspelling cannot contribute much additional flexibility since it is dependent upon the level of language the child develops, which is less related to sign language (which is an *independent* language) than to the oral language that so few deaf children ever master. Frequently deaf individuals use fingerspelling to abbreviate names or other proper nouns, or to incorporate into manual language some concept that sign language doesn't express. However this is purely a function of the signer's mastery of oral language and is usually not too significant.

As Tervoort says, sign language is "situation-bound, less objective and less linguistically categorized than English" (49, p. 473). It is difficult to express pronouns in sign language, and they are usually replaced by pointing. "He" and "she" have no equivalents and when they are used, they are fingerspelled. It is also difficult to refine concepts in sign language or use words very precisely. (For example, "home" has no exact equivalent in sign language, and the sign used for home is a concatenation of the sign for eat and sleep.) As Louie Fant, a professor at Gallaudet College says, for the deaf "the general concept is sufficient. They do not care if the person was *fatigued* or *exhausted*, just the fact that he was tired is adequate. This is due to their language handicap not to lack of intelligence or ambition" (44, p. ii).

Functional words such as "no," "but," "or," etc., occur much less frequently in sign language than in oral language, and there is no manual sign for a question mark. This may be because facial expressions and bodily position are frequently used in sign language as syntactic as well as modal indicators. Signs follow each other according to the general principle of keeping verbs and their subjects as close as possible, and of keeping the order of the signs as parallel as possible to the order of what is being de-

scribed. Verbs have no tenses though there are special signs for "now," "past," and "future." A complex conditional such as "if I were to go, then you would be free" would be almost impossible to express in sign language. In fact, complex syntactic structure is not possible in sign language as it exists now. However, it is important to stress, as does Tervoort, that there is nothing intrinsically impossible about incorporating more complex and precise modes of communication into sign language. Perhaps the greatest problem for its development is that so few people use it under such oppressive circumstances.

There is, however, a simple syntactic structure in sign language which is embodied not in the signs but in accompanying para- and prelinguistic behavior that accompanies signing.

The eyes, eyebrows, and mouth, head dips, and other such signs serve the function of syntactic indicators as well as take the place of intonation and inflection in oral language. The head dip, for example, signifies first person singular (47, p. 64), certain movements of the eyebrow indicate that a question is being asked. Thomas Gallaudet is supposed to have signed a story to a class at the American School for the Deaf without using his hands, something perhaps the equivalent of the linguistic game of carrying on a conversation through varying stress, pitch, and juncture while making a continuous and unvarying sound (like humming).

As Fant states:

> As deaf people communicate, their attention is focussed on the face. They do not look at the hand, as the beginning student usually does. The face is the focal point. Therefore it carries most of the burden of enriching the meaning of signs and finger spelling. The student must train his face to be so pliable that with wrinkles, eyebrows, eyes and mouth he can display a multitude of meaning. It must become automatic for him to sign "bad" and at the same instant have a deep furrowed frown in his face, or if the meaning dictates, a raised, questioning eyebrow [44, p. 4].

Several conclusions can be drawn from these as yet incomplete studies of sign language. First: sign language is a distinct type of language with rules of its own, and not merely a translation of oral language.

Second: sign language is limited in scope and expressive power compared to oral language. It is bound to the concrete, and with difficulty rises to abstraction, metaphor, irony, and humor. The various relevant studies

seem to imply that this concreteness generalizes to the learning of English, and it is an interesting question as to whether this limitation may be responsible for some of the deaf child's behavior and maturational problems.

Third: the results of these studies are not all negative, for as Stokoe says, the analysis of sign language shows that "important as speech and hearing are in human culture, the symbol-using capacity in man is anterior, as this symbol system of those deprived of hearing demonstrates" (47, p. 67).

And finally, one must admire individuals who find themselves struggling with a language which depends so much upon individual ingenuity. As one of the manuals of sign language says:

> The mastery of the sign language consists not so much in the number of signs one may know as in the cleverness with which those he does know are used. Many different ideas can be expressed with a few signs coupled with natural gestures. Many ideas having no sign of their own may readily be communicated by signs to define them. Indeed, many words must be signed in this way, which somewhat resembles the German way of coining words. "Gentlemen" is literally (in signs) "polite man;" "neighbor" is "live-near-er;" and "coal" is "black hard" [45, p. 17].

IV. Experimental Research in Language and Concept Formation; Conclusion

There has been an extensive body of research on the language and conceptual capacity and achievement of the deaf. Investigators have probed the concept formation in the deaf, their abstraction and classifying abilities, etc., and have measured the deaf against the hearing as well as against other deaf individuals of different ages. All of this research however has assumed that if the deaf individual has no verbal command of a concept, then he has no linguistic representation of it. It has assumed, in a way that becomes dramatically clear as one examines the research, that the deaf individual's linguistic accomplishments are identical with his verbal accomplishments. And when the conceptual or abstracting ability of the deaf is found to outrun his verbal ability, debates have arisen over preverbal, covert, and intuitive communication. Rather than look at the deaf more closely, magical explanations have been invoked and metaphysical arguments provoked. A review of the research readily reveals this, and just as readily reveals the

fact that many of the mysteries of the concept formation and abstract ability of the deaf are dissolved in the light of an analysis of sign language.

Most ongoing research in the field of the deaf is concerned with two questions: 1) What is the language of the deaf like? and 2) what is the relationship of oral language to concept formation and thinking and to performance on tests of concept formation?

The most extensive study of the first question was conducted by Fritz and G. M. Heider at the Clarke School for the Deaf and reported in an entire number of *Psychological Monographs* (40). The Heiders analyzed 1,118 written accounts of short motion pictures shown to deaf and hearing children. The deaf children were from eleven to seventeen years old, the hearing eight to fourteen years old, a tacit statement of the retardation of the deaf children's language. The Heiders concluded that: 1) the deaf use relatively simple language units; 2) their sentences are shorter, have fewer verbs in clauses (subordinate or coordinate) and more verbs in simple sentences than hearing children; 3) they use causal clauses and object clauses beginning with "that" more than the hearing; 4) they do this because they have less comprehension of the paragraph as a unit; 5) they use fewer shades of meaning and fewer contexts where precision of meaning is important; 6) they use more fixed forms, avoid elliptical forms of language, and prefer simple fixed expressions; 7) they explain "why" more often than the hearing; and finally, 8) they rarely speak of possibilities, preferring to describe concrete actualities. These results are so strikingly similar to Tervoort's conclusions with respect to the nature of sign language that it may be possible to conclude that *the limitations of sign language generalize to the limitations that are found in deaf children's oral speech*. Instead of sign language being an inadequate translation of English, the opposite may be true, i.e., that *the deaf child's grasp of English may be obtained through translating it into sign language*.

Mildred Templin (41) more recently reported a study of deaf and hearing children's knowledge of twenty-five "thing" and "non-thing" referent words. The former were house, clock, clothes, car, door, dirt, boat, food, street, and garbage; the latter were friend, big, faith, command, new, add, danger, all, strong, death, God, wise, hate, enemy, and master. She used three tests of word usage (sentence constructions, similarities, and analogies). The tests were given twice, once after a two year interval. She found that

in word knowledge six year old hearing children defined significantly more "thing" words than twelve year old deaf children (at the .01 level) and more than the fourteen year old deaf children (though not significantly more). The number of "non-thing" words defined by the deaf child of fourteen was the same as eight or nine year old hearing children. Yet the deaf children increased significantly in their own word knowledge from twelve to fourteen. The deaf had a tendency also to perseverate in the way they made their responses ("a house *is what to* live," "a car *is what to* ride," "a food *is what to* apple," etc.).

For the synonyms, the hearing children as a whole gave fewer but more adequate responses. However deaf children at eleven, twelve, and fourteen did not recognize as many synonyms as the six year old hearing children. In general, the deaf children's responses were developmentally retarded. Significantly, they did not display a distinct pattern of deafness. In fact, there seemed to be some developmental improvement of the deaf over the two years. This result, as well as many others examined below, seems to contradict Myklebust's notion of a distinctly different pattern of organization for the deaf which covers all fields of behavior (21). As noted, there is considerable disagreement about this point in the literature, and some proof that in certain areas of linguistic and conceptual experience the deaf children are developmentally retarded rather than different.

Templin found more dramatic results on the three tests of word usage. On the analogies test, six year old hearing subjects couldn't solve any items, but fourteen year old hearing subjects had a mean score of 8.5 out of 11. On the other hand the deaf subjects at all ages scored lower than eight year old hearing subjects. Similar results held for the other two tests of usage. Thus while word knowledge increased for the deaf children over the two years, word usage did not.

An unpublished study of word associations in deaf and hearing children by Lillian Restaino of the Lexington School also showed that "there is some indication that the children in schools for the deaf respond with greater uniformity than do hearing children studied" (34, p. 6) and that "deaf children have a restricted repertoire of responses from which they can choose" (p. 7). The conclusions of these two papers are consistent with the results of the analysis of sign language.

The major research on conceptual thinking in the deaf and its relation to language has been done by Kates and Kates at the Clarke School for the Deaf in Northampton (Massachusetts), Pierre Oleron in Paris, Hans Furth at the Catholic University of America, and Joseph Rosenstein at the Lexington School for the Deaf in New York. Before considering their results it might be cautioned that each researcher is connected with a particular institution involved in the education of the deaf. These institutions use different methods of teaching language, and consequently their pupils, the usual subjects of the experiments, have different exposures to language. Lillian Restaino, in the unpublished paper referred to above (34), studied two deaf populations as well as a hearing one and concluded that "certain measures of word associations are sufficiently sensitive to reflect differences in language learning environments" (37, p. 12).

It should be further cautioned that Pierre Oleron's results were obtained on studies of deaf populations where no check was made to assure that the subjects were congenitally or prelinguistically deaf, and hence his results must be replicated with a carefully diagnosed population.

The Kates and Kates study (16) focused on two cognitive processes in the deaf, categorization and verbalization. It assumed that "words serve as the arbitrary verbal attributes of non-verbal categories" and hoped to prove that deafness "interferes with this process of attaching the correct verbal attribute to its corresponding non-verbal category" but does not "render deaf children qualitatively distinct from hearing children" or prevent them from being able to abstract and categorize. Here then is a covert attempt to disprove Myklebust's contentions about the qualitative differences of deaf children. In many of these studies this assertion is continually attacked, though usually Myklebust's name is never mentioned.

The Kateses hypothesized that deafness would not affect all verbalization processes "in which the material to be ordered are words." They further hypothesized that the problems with verbalization would fall along normal developmental lines and disappear in adulthood. They conducted a series of experiments which attempted to separate verbalization from categorization by using two hearing control groups, one matched with the deaf subjects on sex, age, and IQ, the other matched with the deaf subjects on sex, IQ, and achievement. The aim of the two control groups was to establish that where the deaf were retarded, they performed as well as hearing

subjects who were on the same achievement levels and therefore that the deaf children were merely retarded developmentally. All the deaf children were drawn from the Clarke School, a school that uses the oral method. A further study was made of deaf and hearing adults matched on sex, age, intelligence, and occupational status. All of the deaf adults were graduates of the Clarke School.

The Goldstein-Gelb-Weigl Objects Sorting Test was administered to all the subjects. In the first part of the test, a series of thirty-three everyday objects (a cigar, silverware, pliers, etc.) was placed before the subject, who was asked to group the objects that belonged together. A second part consisted of the subject matching objects with a sample preselected from the group of thirty-three, and the third part asked the subject to give reasons for his choice.

The results were as hypothesized—there was no significant difference among the deaf and the hearing groups in the number of categories utilized in part one or in the matching in part two. However in part three, which consisted of categorizing the preceding activities, "the deaf subjects had significantly more inadequate verbal verbalizations than the older hearing subjects . . . and . . . the younger hearing subjects."

When the tests were switched to sorting words, the deaf were less adequate than the older hearing group though as adequate as the younger group. The Kateses concluded that "the deaf [children] have less ability to categorize words than objects"—that is, they can group objects with greater success than they can manipulate words.

When the same tests, plus the Digit Symbol, Picture Completion, and Block Design subtests of the WAIS, were administered to the deaf and hearing adults, no significant differences were found in any of the tests. The Kateses concluded that the deaf caught up to the hearing adults.

Before these results can be accepted, certain questions must be raised. First of all, in regard to the conclusions concerning the deaf children, the Kateses assume that words are mere labels that are attached to categories which are somehow preverbally known. They assume that when deaf children can make certain physical categorizations, yet have not mastered the English word to describe the process, they have done something on a preverbal basis. Yet calling responses "preverbal" sounds suspiciously like a way of saying that the deaf children respond in ways we don't understand.

But there is a more fundamental objection to the Kateses' assumption about the "label" nature of verbalization. As Zubin points out (42), there are at least two types of abstraction, "abstraction from reality" and "abstraction from possibility." The former is the analysis of actual fact and experience into attributes, or "categories," as the Kateses consider them. The second is an abstraction from these attributes to yield even higher level attributes. Thus, one may abstract the attributes "red" and "green" from experience, but one abstracts the notion of "complementary colors" from the attributes "red," "green," etc. Moreover, naming the attribute abstracted from reality is not merely attaching a label to something experienced. Rather it is *making that experience available for higher level abstractions and therefore for more complex and useful descriptions of reality*. The ability to make preverbal connections (if they are that at all) is by no means the same as being able to categorize aspects of experience. After all, animals know what is food and non-food, safe and non-safe, light and dark. Yet these categorizations are not available to them for articulation into higher systems since they cannot symbolize. If someone can both symbolize and verbalize, as the hearing subjects do, it is not the same as merely categorizing. In short, by ignoring sign language and therefore considering these deaf children to be categorizing preverbally, the Kateses may be underselling what deaf children actually can do. That the children usually do not articulate these categories into higher ones may be true. That they *cannot* has not been shown, even for sign language. Perhaps a major mistake is equating "verbal" with "linguistic" and thereby eliminating the possibility that a sign may be linguistic as well as a word.

The objections to the Kateses' results with respect to deaf and hearing adults are simpler. Fewer than 55 per cent of deaf individuals actually graduate from elementary schools for the deaf (6). Therefore, there is no guaranteeing that the Kateses have not matched Clarke school graduates, the top of the deaf population, with the bottom of the hearing population on these tests. These results must therefore be taken with great reservations. They do not at all establish that the deaf have less linguistic ability than the hearing.

Having considered these results in some detail, we can treat the rest of the literature on the "conceptual" thinking of the deaf more briefly. In general all of the studies have equated "conceptual" thinking with an over-

all capacity to categorize, and have discovered deaf children (only the Kateses and Furth have experimented with deaf adults as well) just as capable of categorizing with respect to perceptual, concrete material as hearing subjects of the same age and IQ but less able to categorize "verbally." Researchers have also discovered that deaf children between seven and twelve perform in the same way that hearing children from three to six years younger perform. The materials used in the experiments are not much more complex than those used by the Kateses, although some involve colored forms instead of familiar objects. No tests of higher level attributes and no tests involving deaf children's responses in sign language have been uncovered by the author. It has even been reported that some of the testers do not even understand sign language.

Pierre Oleron has found that deaf children do not perform as well as hearing children matched on age and IQ on the Raven Progressive Matrices (26). He has also found that deaf children could classify objects as well as hearing children when the task required recognition of "perceptible qualities of the objects" (28, p. 307). They have trouble though when they must classify objects according to "conceptual conditions (the objects must be grouped according to their belonging to a common class)" since "the subject lends too much importance to the observed data." Yet Oleron, like other experimenters with deaf children, points out that the deaf children's failures are not the same failures of the hyperactive, perseverating "minimally brain-injured" children studied by Goldstein. *The deaf children are not necessarily and unchangeably concrete.* They "benefit from the experimenter's help," "sort color exactly like normal children," and even their failures approximate the behavior of younger hearing children, whereas this is not true for Goldstein's subjects. Oleron reinforces the idea, voiced so often in articles about this subject, that the educational failure of deaf children is really the failure of their educators.

Oleron also notes that deaf children "have a tendency to give too much importance to the observed elements . . . the mental processes of the deaf are characterized by an especial concern for observed data." However, his experiments (31) in exposing deaf children to mechanical devices, and his discovery that they can figure out how things work as well as hearing individuals lead him to assert, as do the Kateses, that "we are led by the results to the view that language does not play such an important role as one would

think in order to achieve certain tasks" ["nous sommes amenes par les resultats . . . a juger que le language ne joue pas un role aussi important que des auteurs l'on pense pour l'execution des certains taches"]. One would also think that an examination of results of experiments with animals would lead to the same conclusions.

Hans G. Furth (10, 11) surveys the literature discussed above and presents his own experiments (9) which purport to show that "the capacity of deaf people to deal with conceptual tasks may not in fact be generally retarded or impaired" (9, p. 386), and that "language does not influence intellectual development in any direct, general or decisive way" (11, p. 160). Furth used three tests, a sameness test, a symmetry test, and an opposition test. The hearing group was superior to the deaf group only on the opposition test which, he suggests, needed the use of language whereas the others did not. Furth never clarifies why "opposition" demands language any more than "sameness" or "symmetry," since one can "see" opposites as well as symmetric or similar forms. This aside, Furth leaped to conclude that his study and others quoted above "suggested that the influence of language on concept formation is extrinsic and specific" (9). He too ignored the fact that his deaf subjects' sign language may have included concepts necessary to solve his tasks. He leaped too quickly to the assumption of pre- or non-verbal thinking. (See Blank [3] for additional critical comments.)

More recently Furth theorizes that the crucial deficit of the deaf may be their lack of experience, which has an indirect cognitive effect via lack of sufficient stimulus throughout their sheltered lives (11, p. 159). He says "experience may be a sufficient determinant for development of intellectual capacity and deaf adults may have made up their possible initial experiential deficiency" (11, p. 153). The facts cited at the beginning of this paper about the deaf community contradict this assertion.

Joseph Rosenstein (35) also studied the performance of deaf children on perceptual discrimination, multiple classification, and concept attainment and usage tasks. He hypothesized that "when linguistic requirements are eliminated or minimized, deaf children would not differ from hearing children in both perceptual and more complex cognitive behaviors." When scrutinizing his results, one must remember again that *"linguistic" is equated with "verbal,"* and that sign language as a linguistic system *the child may know* is not controlled as a relevant variable.

Rosenstein's tasks were very simple (as indicated by the fact that on the perceptual discrimination test all subjects responded correctly to all ten tasks on the first trial). All of his tests failed to produce a distinction between deaf and hearing subjects, and though this may seem trivial, Rosenstein's conclusion is significant in the context of this paper: "No differences will be observed between deaf and hearing children . . . where the language involved in these tasks is within the capacity of the deaf children" (35, p. 119). Commenting elsewhere on results of the studies discussed in this paper, Rosenstein adds support to some of the criticisms voiced above when he says "the educational treatment of the inadequate development of language in deaf children may very well be the source of the inferior performance on cognitive tasks that has been observed" (36, p. 283).

One can go on from here to ask how this cognitive inadequacy, added to the limitations of sign language, may extend to the emotional sphere. Beatrice O. Hart, of the Lexington School for the Deaf, informally gave deaf high school children a series of words which related to the intensity of a particular emotion and asked the children to order them. Thus she would mix a series like "ecstasy," "thrill," "happiness," "indifference," "sadness," and "misery," and make the children arrange these words in a forced choice situation. The deaf children were confused and though they could differentiate misery and sadness from the others, the rest of their ordering was random. This suggests that by not knowing the many shades and varieties of feelings and emotions that hearing people master through language, the deaf may have special problems with *expression* and *control of emotion*—or what we could call social maturity. It would be interesting to formalize such a procedure using Q-sorts and forced choice situations, and see if scores on differentiating intensity and variety of emotion correlated to scores on emotional maturity scales like Doll's (21). There are many such possibilities, e.g., "angry," "annoyed," "bothered," undisturbed," "calm," etc. No such studies exist at the moment.

There is one study relating to the development of moral judgments in deaf and hearing children. Martin L. Nass (23) used a questionnaire after telling thirty deaf children (six at each age level from eight through twelve at one year intervals) four stories, two concerned with "peer reciprocity versus dependence on adult authority" and two concerned with evaluating an act (e.g., a fight) as to the intent or motivation behind it. Nass used

Piaget's clinical method of free interrogation after responses to set questions. The same procedure was followed with a group of hearing children matched on age and IQ.

Nass found that the deaf children were "less concerned with pleasing the authority for its own sake and respond more to the reality qualities of the situation." The deaf also were more concerned with peers than authority figures, not a surprising result considering the bond of deafness that usually separates them from adult authorities.

In regard to the stories designed to elicit motives and intentions, the deaf at all ages lagged behind the hearing. They were more concerned with the concrete outcome of actions than the motives or intentions involved. This lag, however, decreased as the deaf child got older, and Nass feels it may be developmental. Again one can speculate about the consequences of deaf children's orientation toward the concrete and the trouble an individual might have with social interaction if the ability to uncover and formulate the motives of others is not naturally acquired. However, more detailed study of the relationship of language to the ability to understand motivation and to social maturity is necessary. It is also necessary to test deaf children with sign language as well as oral language. Nass may know no sign language, and it is by no means clear that the children understood his questions or that he understood their responses.

These partial results indicate that there may be a significant relationship between the acquisition of language and social maturity, and tend to confirm Altshuler's and Myklebust's (1, 2, 21) results regarding the social immaturity of deaf children. There are some indications that such immaturity may hold for deaf adults as well (6), but the work in this area is still too sketchy to permit any definite conclusions.

A final relevant study will be discussed. Three and four year old deaf children were brought together for four weeks with hearing children of the same age during the summer of 1951, and put in the same classes (8). The deaf children were observed and no suggestion of "dulled personality" or any unique patterning of personality and adjustment emerged to differentiate them from the hearing children. The two groups got along well together, learned non-verbal tasks, and were able to communicate and play with each other without the use of words. If these observations are generally valid,

 the implications are most interesting. It may be that the development of

problems of social maturity and interaction begin to develop when that interaction is brought to a linguistic plane. This may not be until the child is four or five, the age when language begins to develop its more complex forms and coincidentally the age when most deaf children enter school. From her observations, Fiedler, the author of the study on this camp experience, concludes that "we cannot defend the early emphasis on precise, careful speech as necessary to the social adjustment of the young child" (8, p. 273). The children, she indicated, seemed quite able to do without it.

One may even go further than Fiedler and wonder what value there is in forcing the deaf child to speak orally as early as possible and to understand oral language especially without the adult in turn trying to understand sign language. Further, and more basic, oral teaching has not been successful and conceivably may lead to social maladjustment in the deaf and ultimately to their rejection of oral language altogether when they become adults. What then is the justification for using it? Primarily the teaching of oral language is justified 1) because our society is a hearing society and it is believed that the deaf must be taught to take a place in the hearing world, and 2) because sign language structure is not the same as English structure and therefore using it presumably makes learning English more difficult. But since deaf individuals do not join hearing society in general and do not learn and use English, these arguments are hollow. It is necessary to reexamine the education for the deaf and see if new approaches are possible.

Several items examined here provide clues to what such an approach might be. First, it has been seen that some deaf adults do learn to master oral language fully, and therefore it is clear that there is nothing inherently impossible in the deaf knowing oral language as well as the hearing. Secondly, though sign language is concrete and situation-bound, it need not (as Fr. Tervoort maintains) necessarily be so. Perhaps it has remained on such a primitive level precisely because it has been suppressed and has been neither developed nor articulated within the school curriculum. Thus, it seems imperative that teachers of the deaf master sign language and seek to further its development. Let sign language be used in the schools and taught in the schools, with oral language as the child's second language occupying more of the curriculum as the child gets older. Sign language should be used to show the deaf child why oral language has advantages. Then perhaps he

would not have to grow up using one natural esoteric language and one unnatural exoteric language, accepting neither fully nor benefiting fully from either. Under such circumstance perhaps it will be easier for the deaf child to establish his identity, and it is even possible that the social adjustment and maturity of the deaf may be improved.

In conclusion, this discussion has suggested that the personality problems of the deaf, as well as their problems of cognitive limitation, educational achievement, and social adjustment, above and beyond whatever problems may exist in their family life, may be due to a combination of the current limits of sign language and to the methods used in educating the deaf. Deafness does not *a priori* prevent language learning nor does there seem to be any reason to believe that adequate educational methods cannot be developed to teach oral language successfully. This paper however has made several concrete suggestions for the development of such methods and has attempted to show, on the basis of the limited experimental evidence available, how inextricably bound together are the social, emotional, linguistic, conceptual, and intellectual problems of the deaf.

There are other significant problems, as noted at the outset, that this paper has not dealt with. Why, for example, considering its size, is so little known about the deaf population in the United States? Wouldn't there be advantages in a central data bank and in a greater exchange of education results throughout the country? Why does such a data bank not exist? Nor such exchange? Again, the paper has not attempted to examine why so many apparently failing and different philosophies of the education of the deaf continue to exist. The key question here is: What are the barriers to ideological and institutional change?

The interesting question of what the deaf think of the education they receive has not been raised. What part do the deaf play in the formulation of policies that concern them? Who, in fact, runs organizations of and for the deaf? Who are the spokesmen of the deaf community—the congenital deaf or the adventitious deaf who acquired language before their deafness and therefore do not face the problems of the congenitally deaf? What is the relation of individuals who are deaf to the community of educators of the deaf? All of these questions must be faced directly once the magnitude and nature of the problem as presented in this paper is acknowledged.

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